

## The 50 most cited articles about wrist surgery

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### Abstract

The purpose was to establish a ranking of the 50 most cited articles about wrist surgery and analyse their features. Science Citation Index Expanded was used to identify the 50 most frequently cited orthopaedic journal articles written in English, searching for the topic “wrist surgery” in the subject category “Orthopaedics”. Then, we analysed the number of citations, citation density, authorship, article institution, the year of publication, the country of origin of the article, name and impact factor of the journal, and publication type of the article. The 50 most cited articles were published in only 6 of the 74 journals included under the category “orthopaedics”. Citation count ranged from 256 for the first one to 67 for the 50th article. Most of them were written by American authors. These articles were published between 1991 and 2011. “Distal Radius Fractures” was the most common issue. This type of bibliographic analysis could be particularly useful for other young Authors who would like to improve their research in wrist and hand surgery and make their publications more citable and appreciated by the scientific community.

### Introduction

Nowadays, in the era of the Internet the importance of scientific publications is growing more and more. With a few clicks, a modern physician can find hundreds of articles about a single issue, so it seems easy to get lost in this storm of information. For this reason, it could be useful to make a selection of the most important articles. The relevance of an article in the academic world can be measured on the basis of the number of times it has been cited. The number of citations is used as a determinant of the influence of an article in the field of interest. On the other hand, a huge quantity

of citations must not be considered as a synonym of high quality of the article.<sup>1</sup> Recently, many authors have published about the “top-50-most-cited articles” in many different medical specialties and super-specialties.<sup>2-8</sup> As for orthopaedic literature, we can find rankings of the most cited articles about spine surgery,<sup>9</sup> paediatric surgery,<sup>10</sup> shoulder surgery,<sup>11</sup> hip and knee surgery,<sup>12</sup> and other fields. To our knowledge this is the first analysis of the 50 most cited articles about wrist surgery. For our research we used a huge database called Web of Science Core Collection and available on the Internet. This database comprehends all the world’s leading scholarly literature in the sciences, social sciences, arts, and humanities and examine proceedings of international conferences, symposia, seminars, colloquia, workshops, and conventions from 1970 onwards.

### Materials and Methods

The aim of our work was to define and analyse the 50 most cited articles about wrist surgery.

The research was conducted in October 2017 using the Web of Science Core Collection database through the ISI Web of Knowledge. We searched all the articles written in English about the topic “wrist AND surgery”. Then, we sorted them from the most cited to the least cited and refined our research using the category “ORTHOPEDICS” which comprehends 74 journals. We selected the first 50 articles, excluding 5 articles that were off topic. For each article we analysed the number of citations, authorship, article institution, the number of calculated citations, the year of publication, the country of origin of the article, name of journal, and publication type of article. In addition, we determined the citation density that is the total number of citation/years since publication and the impact factor of the publication journals. Based on guidelines from Journal of Bone and Joint Surgery-American Volume, level of evidence for clinical articles was independently determined by two reviewers. In case of disagreement (3 articles), the final decision was made by a consensus of three reviewers.

### Results

We found a total number of 1942 publications written in English about wrist surgery and they were all journal articles, except for 2 reviews. The titles of the top 50 articles are listed in Table 1 along with

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Key words: Wrist surgery; citation density; impact factor; bibliographic analysis; most cited article.

Contributions: AN, collected data using the Web of Science Core Collection database through the ISI Web of Knowledge. SM, analysed the data. AMN and AP wrote the article. NP and PDP worked as reviewers in order to define the level of evidence of each article analysed. MS was the chief coordinator of the whole work.

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number of citation and the calculated citation density, *i.e.* the number of citations an article has received on average per year since its publication. The article “Volar fixation for dorsally displaced fractures of the distal radius: A preliminary report”<sup>13</sup> was found to be the most cited with 256 citations. The number of citations ranged from 256 citations for the first placed and 67 citations for the last one. The top 50 articles were published in 6 of the 74 journals categorized under the topic “Orthopaedics”. Almost all articles were published in American journals except for two articles that were published in British journals. In particular, about three-quarters of the total number were published in the “Journal of Hand Surgery-American Volume” (n=38), while the remnants were published in the “Journal of Bone and Joint Surgery-American Volume” (n=7), in the “Journal of Bone and Joint Surgery-British Volume” (n=2), in the journal “International Orthopaedics” (n=1), in the “journal Clinical Orthopaedics And Related Research” (n=1) and in the journal “Arthroscopy” (n=1). As for the Authors, most of them worked in the USA (n=40), the other were from Japan (n=4), England

**Table 1. The titles of the top 50 articles.**

Rank	Article	N. citations	Citation index
1	Orbay JL, Fernandez DL. Volar fixation for dorsally displaced fractures of the distal radius: A preliminary report. <i>J Hand Surg Am</i>	256	16,52
2	Orbay JL, Fernandez DL. Volar fixed-angle plate fixation for unstable distal radius fractures in the elderly patient. <i>J Hand Surg Am</i>	218	15,95
3	Macdermid JC; Richards RS; Donner A; et al. Responsiveness of the short form-36, disability of the arm, shoulder, and hand questionnaire, patient-rated wrist evaluation, and physical impairment measurements in evaluating recovery after a distal radius fracture. <i>J Hand Surg Am</i>	203	11,60
4	Filan SL; Herbert TJ. Herbert screw fixation of scaphoid fractures. <i>J Bone Joint Surg Br</i>	156	7,37
5	Young BT; Rayan GM. Outcome following nonoperative treatment of displaced distal radius fractures in low-demand patients older than 60 years. <i>J Hand Surg Am</i>	135	7,64
6	Cohen MS; Kozin, SH. Degenerative arthritis of the wrist: Proximal row carpectomy versus scaphoid excision and four-corner arthrodesis. <i>J Hand Surg Am</i>	133	7,98
7	Carter PR; Frederick HA; Laseter GF. Open reduction and internal fixation of unstable distal radius fractures with a low-profile plate: A multicenter study of 73 fractures. <i>J Hand Surg Am</i>	133	6,82
8	Chung KC; Watt AJ; Kotsis SV, et al. Treatment of unstable distal radial fractures with the volar locking plating system. <i>J Bone Joint Surg Am</i>	132	12,28
9	Hermansdorfer JD; Kleinman WB. Management of chronic peripheral tears of the triangular fibrocartilage complex. <i>J Hand Surg Am</i>	126	4,75
10	Lavernia CJ; Cohen MS; Taleisnik J. Treatment of scapholunate dissociation by ligamentous repair and capsulodesis. <i>J Hand Surg Am</i>	124	4,86
11	Changulani M, Okonkwo U, Keswani T, Kalairajah Y. Outcome evaluation measures for wrist and hand - which one to choose? <i>Int Orthop</i>	112	11,69
12	Stuart PR; Berger RA; Linscheid RL; An KN. The dorsopalmar stability of the distal radioulnar joint. <i>J Hand Surg Am</i>	110	6,41
13	Crisco JJ; Coburn JC; Moore DC; et al. In vivo radiocarpal kinematics and the dart thrower's motion. <i>J Bone Joint Surg Am</i>	108	9,19
14	Rozental TD; Blazar PE; Franko OI; et al. Functional Outcomes for Unstable Distal Radial Fractures Treated with Open Reduction and Internal Fixation or Closed Reduction and Percutaneous Fixation A Prospective Randomized Trial <i>J Bone Joint Surg Am</i>	106	13,12
15	Lindau T; Adlercreutz C; Aspenberg P. Peripheral tears of the triangular fibrocartilage complex cause distal radioulnar joint instability after distal radial fractures. <i>J Hand Surg Am</i>	105	6,06
16	Adams BD; Berger RA. An anatomic reconstruction of the distal radioulnar ligaments for posttraumatic distal radioulnar joint instability. <i>J Hand Surg Am</i>	101	6,52
17	Szabo RM; Slater RR; Farver TB; et al. The value of diagnostic testing in carpal tunnel syndrome. <i>J Hand Surg Am</i>	100	5,50
18	Amadio PC; Silverstein MD; Ilstrup DM; et al. Outcome assessment for carpal tunnel surgery: The relative responsiveness of generic, arthritis-specific, disease-specific, and physical examination measures. <i>J Hand Surg Am</i>	100	4,69
19	Viegas SF; Yamaguchi S; Boyd NL; Patterson RM. The dorsal ligaments of the wrist: Anatomy, mechanical properties, and function. <i>J Hand Surg Am</i>	99	5,40
20	Palmer DH; Paulson JC; Lanelarsen CL; et al. Endoscopic carpal-tunnel release - a comparison of 2 techniques with open release. <i>Arthroscopy</i>	98	4,10
21	Wright TW; Horodyski MB; Smith DW. Functional outcome of unstable distal radius fractures: ORIF with a volar fixed-angle tine plate versus external fixation. <i>J Hand Surg Am</i>	95	7,60
22	Wolfe SW; Neu C; Crisco JJ. In vivo scaphoid, lunate, and capitate kinematics in flexion and in extension. <i>J Hand Surg Am</i>	95	5,59
23	Diaz-Garcia RJ; Oda T; Shauver MJ; Chung KC. A Systematic Review of Outcomes and Complications of Treating Unstable Distal Radius Fractures in the Elderly. <i>J Hand Surg Am</i>	94	14,85
24	Berger RA; Imeada T ; Berglund L; An KN. Constraint and material properties of the subregions of the scapholunate interosseous ligament. <i>J Hand Surg Am</i>	94	5,22
25	Dias JJ; Wildin CJ; Bhowal B; Thompson JR. Should acute scaphoid fractures be fixed? A randomized controlled trial. <i>J Bone Joint Surg Am</i>	93	7,80
26	Weiss, APC. Scapholunate ligament reconstruction using a bone-retinaculum-bone autograft. <i>J Hand Surg Am</i>	92	4,72
27	Chun S; Palmer AK. The ulnar impaction syndrome - follow-up of ulnar shortening osteotomy. <i>J Hand Surg Am</i>	92	3,73
28	Musgrave DS; Idler RS. Volar fixation of dorsally displaced distal radius fractures using the 2.4-mm locking compression plates. <i>J Hand Surg Am</i>	86	7,07
29	May MM; Lawton JN; Blazar PE. Ulnar styloid fractures associated with distal radius fractures: Incidence and implications for distal radioulnar joint instability. <i>J Hand Surg Am</i>	86	5,80
30	Mitsuyasu H; Patterson RM; Shah MA; et al. The role of the dorsal intercarpal ligament in dynamic and static scapholunate instability. <i>J Hand Surg Am</i>	85	6,30
31	Van Schoonhoven J; Fernandez DL, Bowers WH; Herbert, TJ. Salvage of failed resection arthroplasties of the distal radioulnar joint using a new ulnar head prosthesis. <i>J Hand Surg Am</i>	84	4,85
32	Short WH; Werner FW; Green JK; Masaoka S. Biomechanical evaluation of ligamentous stabilizers of the scaphoid and lunate. <i>J Hand Surg Am</i>	83	5,60
33	Wright TW; Glowczewskie F; Cowin D; Wheeler DL. Ulnar nerve excursion and strain at the elbow and wrist associated with upper extremity motion. <i>J Hand Surg Am</i> .	83	5,13
34	Doi K ; Oda T; Tan SH ; Nanda V. Free vascularized bone graft for nonunion of the scaphoid. <i>J Hand Surg Am</i>	83	4,79

Continued on next page.

(n=2), Canada (n=2), Sweden (n=2), Switzerland (n=2), Australia (n=1) and Germany (n=1) (4 articles were written by authors from two different countries). The most frequently named author was Berger RA with 5 of the top 50 articles followed by Fernandez DL with 3 articles. The top 50 articles were published between 1991 and 2011 and more than half of them were pub-

lished between 2000 and 2005. Figure 1 shows the distribution of the published articles per year. We even analysed the issues of the 50 most cited articles and we found that the most popular issue was “distal radius fractures”(n=15), followed by “wrist motion and anatomy” (n=7) (Figure 2). Level IV was the most frequent level of evidence.

## Discussion and Conclusions

In the orthopaedic field, like in other medical subspecialties, research represents the guiding force towards the future. Our everyday job is based on studies published by our previous peers and the future orthopaedic will practise what we are now

Table 1. Continued from previous page.

Rank	Article	N. citations	Citation index
35	Murase T; Oka K; Moritomo H et al. Three-Dimensional Corrective Osteotomy of Malunited Fractures of the Upper Extremity with Use of a Computer Simulation System. J Hand Surg Am	82	9,29
36	Steinmann SP; Bishop AT; Berger RA. Use of the 1,2 intercompartmental suprapretinacular artery as a vascularized pedicle bone graft for difficult scaphoid nonunion, J Hand Surg Am	80	5,22
37	Egol K; Walsh M; Tejwani N; et al. Bridging external fixation and supplementary Kirschner-wire fixation versus volar locked plating for unstable fractures of the distal radius - A randomised, prospective trial. J Bone Joint Surg Br	78	8,67
38	Wei DH; Raizman NM; Bottino CJ; et al. Unstable Distal Radial Fractures Treated with External Fixation, a Radial Column Plate, or a Volar Plate A Prospective Randomized Trial. J Bone Joint Surg Am	77	9,42
39	Jebson PJJ; Hayes EP; Engber WD. Proximal row carpectomy: A minimum 10-year follow-up study. J Hand Surg Am	76	5,36
40	Short WH; Werner FW; Green JK; Masaoka S. Biomechanical evaluation of the ligamentous stabilizers of the scaphoid and lunate: Part II. J Hand Surg Am	75	5,92
41	Mckay SD; Macdermid JC; Roth JH; Richards, RS. Assessment of complications of distal radius fractures and development of a complication checklist. J Hand Surg Am	74	4,63
42	Trumble TE; Gilbert M; Vedder N. Isolated tears of the triangular fibrocartilage: Management by early arthroscopic repair. J Hand Surg Am	73	3,53
43	Ruch DS; Poehling GG. Arthroscopic management of partial scapholunate and lunotriquetral injuries of the wrist. J Hand Surg Am	73	3,42
44	Wintman BI; Gelberman RH; Katz, JN. Dynamic scapholunate instability - results of operative treatment with dorsal capsulodesis. J Hand Surg Am	73	3,34
45	Meinberg EG; Stern PJ. Incidence of wrong-site surgery among hand surgeons. J Bone Joint Surg Am	69	4,73
46	Jupiter JB; Ring D; Weitzel PP. Surgical treatment of redisplaced fractures of the distal radius in patients older than 60 years. J Hand Surg Am	69	4,55
47	Fowler JR; Gaughan JP; Ilyas AM. The Sensitivity and Specificity of Ultrasound for the Diagnosis of Carpal Tunnel Syndrome: A Meta-analysis. Clin Orthop Relat Res	68	10,59
48	Divelbiss BJ; Sollerman C; Adams BD. Early results of the universal total wrist arthroplasty in rheumatoid arthritis. J Hand Surg Am	68	4,39
49	Minami A; Kato H. Ulnar shortening for triangular fibrocartilage complex tears associated with ulnar positive variance. J Hand Surg Am	68	3,58
50	Moran SL; Cooney WP; Berger RA; Strickland J. Capsulodesis for the treatment of chronic scapholunate instability. J Hand Surg Am	67	5,29

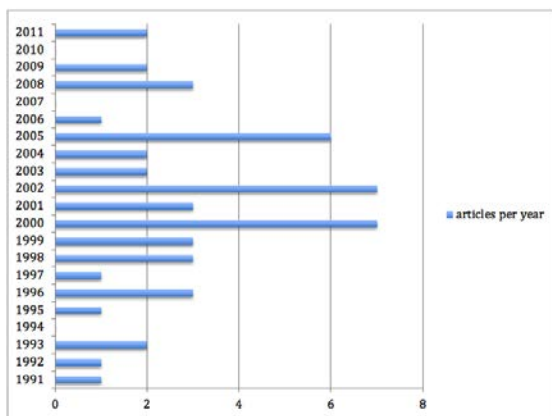


Figure 1. Distribution of the published articles per year.

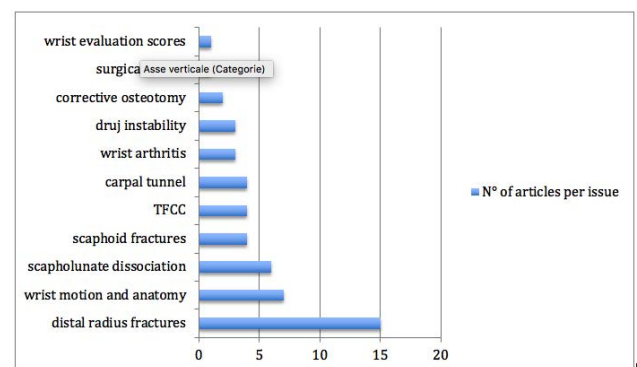


Figure 2. The most popular issues were “distal radius fractures”(n=15), followed by “wrist motion and anatomy” (n=7).

experimenting. In this perspective, the analysis of literature could be an interesting instrument to understand which issues are more investigated and which less, which authors are conducting the most appreciated studies and which direction research will follow in the near future. Even if the number of citations an article has received is not a marker of quality, it can suggest us how much popular the article is inside the scientific community. Before our study, similar bibliometric analysis have been conducted in all medical fields.<sup>2-8</sup> Also in the Orthopaedic branch, many other Authors have published rankings of articles on the basis of the citation count, both in the field of general Orthopaedic<sup>14,15</sup> and of Orthopaedic subspecialties.<sup>9,10,12,16-19</sup> As for the surgery of the upper limb, we found publications on the most cited articles on shoulder,<sup>11</sup> elbow<sup>20</sup> and hand surgery,<sup>21</sup> but none about wrist surgery. Therefore, our work is the first bibliometric analysis on this issue to our knowledge.

Our analysis has evidenced the important influence that the American literature has in this field: 48 of 50 articles are published on American journals and more than three quarters of the Authors in the ranking works in the USA.

“Distal radius fractures” proved to be the most cited topic. The issue of the surgical technique for this fracture seems to be an “evergreen” in literature and the debate is still open.

Obviously, this type of bibliometric analysis is influenced by many different factors. Our research depends on the article categorization of Web of Science that can exclude some relevant articles. A time effect is unavoidable and more recent articles are at a disadvantage. This citation analysis could not evaluate self-citation, citations in lectures and textbooks, and web-based literature. Finally, we must consider the “snow-ball effect” to citations because other authors are more likely to cite an article because of previous citations, rather than for its content or quality.<sup>22</sup> The aim of

this work was to define a list of articles which have been influential in the development of the modern wrist surgery and it could be useful for residents and young hand surgeons to find the milestones of the literature of this field. This list could be also an opportunity to identify new issues that need still to be properly investigated.

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